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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,171	04/18/2006	Andrey V. Belogolovyi	42P21070	7335
45209	7590	08/10/2009	EXAMINER	
INTEL/BSTZ			VO, DON NGUYEN	
BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP				
1279 OAKMEAD PARKWAY			ART UNIT	PAPER NUMBER
SUNNYVALE, CA 94085-4040			2611	
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			08/10/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/576,171	<b>Applicant(s)</b> BELOGOLOVYI ET AL.	
	<b>Examiner</b> Don N. Vo	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/16/06; 3/11/08 &amp; 7/29/09</u> .                          | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Acknowledgement***

1. The Preliminary Amendment filed on 04/18/2006 has been received and placed of record.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7, 8, 15, 16 and 25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification, as originally filed, does not provide support for the "empirical" determination as recited in claims 7, 15 and 25. Although the last sentence of the abstract mentions the "received signal may be demodulated based on the empirically determined reliability values", however, there is no support in the specification of how the "empirically" determination is made. Therefore, the recitation of claims 7, 8, 15, 16 and 25 are not understood.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 4, 12 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation of claim 4 is confusing because of its conflicting languages. The first portion of the claim, lines 1-3, recites "the combination comprises four bits wherein one bit is selected from the N/3 bits and three bits is selected from the N bits" which indicates that the number of bit in the combination is fixed (4 bits). The later portion of the claim, lines 3-6, recites "wherein the number of bits of the combination is based on an allowable bit error rate at a measured value of signal-to-noise ratio of the communication medium" which indicates that the number of bit in the combination is variable.

Similar problem exists for the same recitation recited in claim 12.

The recitation of claim 28 is vague and indefinite because it is unclear of how one of the elements is related to the elements of claim 18.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al (US 2008/0215652).

Regarding claims 1, 2, 9, 10, 17-22 and 26-29, Lin, as shown in figures 2-6, teaches all subject matter claimed except for the transmission of at least 10 giga bits/s over a communication medium. See also paras. [0005], [0007], [0015] and [0020] - [0034]. However, to transmit signal at a rate of at least 10 giga bits/s is well known in the art of digital communications and therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the modulator (51)

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of Lin by employing the transmission of at least 10 giga bits/s over a particular communication medium since it is just a matter of selecting a particular rate for transmission and such modification would not involve any inventive feature.

Regarding claims 3 and 11, Lin, as shown in figures 2-6, teaches all subject matter claimed except for using the LDPC encoding technique. See also paras. [0005], [0007], [0015] and [0020] - [0034]. However, such LDPC coding technique is well known in the art of digital communications and is a specific type of FEC coding and Lin teaches FEC coding. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the encoding technique of Lin by using LDPC coding since it is just of one of the alternative way of encoding the symbols and such modification would not involve any inventive feature.

Regarding claims 4 and 12, Lin further teaches selecting of 4 bits for the symbol and the selecting can be based on the BER and S/N ratio, etc... See [0020] and [0029].

Regarding claims 5, 6, 13, 14, 23 and 24, Lin further teaches mapping using constellation table. See Fig. 4, element (48) and [0032].

Regarding claims 7, 8, 15, 16 and 25, Lin further teaches receiving and decoding the received bit stream which has uncoded bits and coded bits (figures 5A and 5B) using MLSE and generating the bit stream representing data. See [0037] - [0049].

### ***Conclusion***

10. **Examiner's note:** Examiner has cited particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant.

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Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References Lliev (US 2004/0264599), Ok et al (US 2006/0078059) and Zaleski et al (US 2008/0263426) are cited because they are pertinent to the method and apparatus for coding and transmission of symbols.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Don N. Vo whose telephone number is (571) 272-3018. The examiner can normally be reached on Mon-Fri (9:00AM - 6:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MOHAMMAD GHAYOUR can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Don N. Vo/  
Primary Examiner, Art Unit 2611